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AN EVALUATION OF THREE APPROACHES TO TEACHING READING IN FIRST GRADE

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*READING PROGRAMS, READING ACHIEVEMENT, COMPARATIVE ANALYSIS, FIRST GRADE, *BASAL READING, *PHONICS, *SENSORY EXPERIENCES, SEX DIFFERENCES, RACIAL DIFFERENCES, GOLDSBORO, NORTH CAROLINA

THE PURPOSE OF THIS STUDY WAS TO COMPARE THE FOLLOWING APPROACHES TO TEACHING FIRST GRADE READING (1) A TRADITIONAL BASAL READER, (2) BASAL READER PLUS INTENSIVE PHONICS INSTRUCTION, AND (3) THE LATTER TWO METHODS PLUS SENSORY EXPERIENCES. THESE THREE APPROACHES WERE TRIED FOR 140 SCHOOL DAYS (1 YEAR), USING 28 FIRST-GRADE CLASSES. THEY WERE EXAMINED FROM THE STANDPOINTS OF PUPIL ACHIEVEMENT ON THE WHOLE AND ACHIEVEMENT WITHIN CERTAIN GROUPS OF CHILDREN. AMONG THE GROUPS CONSIDERED WERE BOYS VERSUS GIRLS, NEGROES VERSUS WHITES, AND REPEATERS VERSUS NONREPEATERS. ALSO CONSIDERED WERE FACTORS OF GENERAL MATURITY AND LEVEL OF HOME ENVIRONMENT. READINESS TESTS, AN INTELLIGENCE TEST, ACHIEVEMENT TESTS, AND NONTEST DATA WERE USED TO OBTAIN THE PROJECT RESULTS. THESE RESULTS SHOWED THAT NO ONE OF THESE THREE APPROACHES WAS CONSISTENTLY SUPERIOR TO THE OTHER TWO IN ALL AREAS OF ACHIEVEMENT CONSIDERED. CERTAIN TEST SUBSCORES, HOWEVER, DID INDICATE SUPERIORITY OF THE SENSORY EXPERIENCES APPROACH. WHERE THE DIFFERENCES WERE NOT SIGNIFICANT, THE DIFFERENCE WAS STILL IN FAVOR OF THIS APPROACH IN ALL INSTANCES. THE BASAL READER APPROACH WAS SECOND BEST FOR NEGRO SUBJECTS. FOR WHITE SUBJECTS, THERE WAS NO DIFFERENCE BETWEEN THE BASAL READER AND PHONICS APPROACHES. FOR REASONS OF UNCONTROLLED VARIABLES, COMPARISONS OF TOTAL BOYS VERSUS TOTAL GIRLS COULD NOT BE MADE. IT WAS SUGGESTED THAT IF THE STUDY WERE DUPLICATED WITH DIFFERENT CHILDREN AND TEACHERS, HOWEVER, QUITE DIFFERENT RESULTS MIGHT BE OBTAINED. (JH)

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AN EVALUATION OF THREE APPROACHES TO TEACHING READING IN FIRST GRADE

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CONTENTS

PAGE

LIST OF TABLES iv

ACKNOWLEDGEMENTS v

PARTICIPANTS IN THE STUDY vii

CHAPTER

I. ABSTRACT 1

II. INTRODUCTION 2

III. STATEMENT OF PROBLEM 5

IV. METHODOLOGY 6

Description of the Community Population 6

Teacher Characteristics 6

Description of First-Grade Population 6

Final Sample Population 9

Planning and Supervision 10

Classroom Methodology 11

Tests Administered 13

Non-Test Data 16

Recording of Data 16

V. ANALYSIS OF DATA 17

VI. RESULTS 36

VII. CONCLUSIONS AND SUMMARY 38

APPENDIX A - Tests and Test Publishers 41

APPENDIX B - Scott-Foresman Basal Reader Program 43

PAGE

APPENDIX C - Data Card Codes 45

I. Initial Data 46

II. Final Data 52

III. Unique Data 56

BIBLIOGRAPHY

LIST OF TABLES

TABLE PAGE

1. Number of First-Grade Classrooms Per School and Method of Instruction Used in Each Classroom 8

2. F-Ratios for Pre-Measures, I. Q., Repeater-Status, Maturity Index, and Home Environment 19

3. Correlation Matrix for White Males for the Readiness Variables, I. Q., Repeater, Maturity, and Home Environment . . . 21

4. Correlation Matrix for White Females for the Readiness Variables, I. Q., Repeater, Maturity, and Home Environment . . . 22

5. Correlation Matrix for Negro Males for the Readiness Variables, I. Q., Repeater, Maturity, and Home Environment . . . 23

6. Correlation Matrix for Negro Females for the Readiness Variables, I. Q., Repeater, Maturity, and Home Environment . . . 24

7. F-Ratios for Sex x Treatment Analysis of Variance for the Murphy-Durrell Readiness Test, for White Subjects. 26

8. F-Ratios for Sex x Treatment Analysis of Variance for the Thurstone Readiness Tests, for White Subjects. 26

9. F-Ratios for Sex x Treatment Analysis of Variance for the Metropolitan Readiness Test, for White Subjects. 27

10. F-Ratios for Sex x Treatment Analysis of Variance for the Murphy-Durrell Readiness Test, for Negro Subjects. 28

11. F-Ratios for Sex x Treatment Analysis of Variance for the Thurstone Readiness Tests, for Negro Subjects. 28

12. F-Ratios for Sex x Treatment Analysis of Variance for the Metropolitan Readiness Test, for Negro Subjects. 29

13. F-Ratios for Two-Way Analysis of Variance on Stanford Achievement Test, for White and Negro Subjects 31

14. Means and Variances for Subtests of the Stanford Achievement Test for the BR, P, and SE Approaches. 32

15. T-Scores for Comparison of Average Reading Achievement for the BR, P, and SE Approaches 33

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CHAPTER 1

ABSTRACT

The major purpose of this study was to compare three approaches to teaching first-grade reading--a traditional basal reader approach (BR), an approach using basal readers plus an intensive phonics approach (P), and an approach using the latter two methods plus sensory experiences (SE). These three approaches were tried for one year (140 school days), with 10 classes using the BR approach, 9 using the P approach, and 9 using the SE approach. Thus, all 28 first-grade classes in the Goldsboro City Schools participated in the project.

Two major questions were posed in the study: (1) Do a majority of the children achieve significantly better under one of these three approaches? (2) Does a particular method work better for certain groups of children than others? Among the groups considered were boys vs. girls; Negroes vs. whites; and repeaters vs. non-repeaters. Also considered were the factors of general maturity and level of home environment.

Readiness tests, an intelligence test, achievement tests, and non-test data were used to obtain answers to the above questions. Also, sub-test scores were analyzed statistically in an effort to determine which factors were more significant.

CHAPTER II

INTRODUCTION

Since American democracy is highly dependent on spoken and written words, one of the major tasks of the elementary school is to help children to develop skill and understanding in the language arts areas. Donald D. Durrell and Alice K. Nicholson, in Development in and through Reading, (N. S. S. E. Yearbook, Part 1, 1961), state:

> "Richness of experience and acquisition of desirable habits are the major concern of early education, and these support and are supported by language abilities, both spoken and written. The interaction between experiences and language is constant. Without suitable experience, language is meaningless; without language, experiences are often unrewarding. In early education, both the program of experiences and the growth of language require planning."

Of the four areas of the language arts--reading, writing, listening, and speaking--reading is the one area on which success in all other curriculum areas is dependent. That is, success in English, mathematics, science, social studies, foreign languages, etc., will depend to a large extent on a student's having developed adequate reading skills.

It is a well-known fact that more research studies have been done in the area of reading than in any other area of the school curriculum. Yet, the value and the validity of a large percentage of these studies are questionable for a number of reasons. For example, many are based on extremely small populations, yet sweeping conclusions are made by the researchers. Also, inadequate

controls were used in a number of studies. In addition to the criticisms with regard to the methodology which can be leveled at much of reading research, there is the problem of conflicting results and conclusions among studies. There are, in addition, problems of comparing results of studies using identical methods, because of different measurement procedures and criteria of growth. Also, even when research results have been conclusive, it is often not practical, in terms of administrative and financial considerations, to "throw-out" the old and institute a new "crash" program. Finally, there is always the consideration that what was successful in one case may not succeed in another.

The present study is a response to all of the above problems. In addition, it is a response to specific problem areas in the Goldsboro City Schools. Levels of reading achievement in the Goldsboro City Schools have not been as high as would be predicted on the basis of intelligence test scores and other indications of capacity for achievement. Also, teachers felt that more sharing of ideas among teachers and more commonality among methods of instruction at a particular grade level would result in higher pupil achievement. It was the opinion of personnel in the Goldsboro City Schools that these problems should first be attacked at the first grade level, with successively higher grades being involved in later research.

This project was thus conceived with the idea of comparing traditional methodology in first-grade reading with approaches which included some new aspects, yet did not represent a complete revolution in method. In other words, approaches were needed which

would be feasible and practical, would involve a minimum of expense if continued in future years, and would be based on sound principles of learning. It was decided that all first-grade teachers in the school system would be involved in the project. The specific areas of methodology, phonics, and sensory experiences, were chosen because of teachers' feelings that these areas had not been sufficiently emphasized. Also, in reading research there have been conflicting conclusions with regard to the value of phonics, and a relative neglect of the area of sensory experiences. No research study could be found which involved the three approaches used in the present study.

In addition to the purposes of this study as related to local problems and as a response to the need for further research in reading, this project is part of a cooperative effort among 27 projects sponsored by the U. S. Office of Education. All of these projects deal with some aspect of the teaching of first-grade reading. In order to make comparisons among these 27 projects, a Coordinating Center was established at the University of Minnesota. Conferences for the project directors were held to plan common measures of readiness, intelligence, and achievement to be used and common non-test data to be gathered. Each study is reported individually. However, studies of the total 27 projects will be made by the University of Minnesota Coordinating Center.

CHAPTER III

STATEMENT OF PROBLEM

The specific problem under consideration in this study was to evaluate the relative effectiveness of three approaches to teaching reading--a basal reader approach (BR), a basal reader plus an intensive phonics approach (P), and a basal reader plus intensive phonics plus a sensory experience (SE). Considered in this evaluation were the effects of the various approaches on the total subject population and their relative effects on certain sub-populations, using the following variables--race, sex, repeating first grade, home environment, amount of pre-school experience, physical handicaps, chronological age, reading readiness, and intelligence.

Specifically, the following null hypothesis were tested:

1. That observed differences in mean reading achievement for total populations for the three methods--BR, P, and SE--do not differ significantly.
2. That there will be no significant differences in mean reading achievement between:
   a. Boys and girls.
   b. White and Negro subjects.

CHAPTER IV

METHODOLOGY

DESCRIPTION OF THE COMMUNITY POPULATION

Goldsboro has a population of 28,873 people. The average educational achievement, according to the 1960 census, is 9.6 years of school, with 34.9% of the population having completed high school. With an increase in population of 34.6% from 1950 to 1960, due to the reactivation of Seymour Johnson Air Force Base and the migration of workers from the farm to the city, Goldsboro increased its civilian labor force to 4,635. The census divides the labor force into 39.4% white collar occupations, 17.3% employed in manufacturing industries, 35.1% miscellaneous, and 8.2% unemployed. The median family income for the employed population is $3,444.00, with 43.1% of the families making under $3,000.00. This figure represents 1,266 families, with 1,000 of these making less than $2,000.00.

TEACHER CHARACTERISTICS

There were 28 teachers involved in this study. All were female, and all were married with the exception of one in the P approach and two in the SE approach. All teachers but one had at least a batchelor's degree, three had master's degrees, and all held the standard elementary certificate issued by the North Carolina Department of Public Instruction.

DESCRIPTION OF FIRST-GRADE POPULATION

The population for this study included all first graders in the Goldsboro City Schools. Traditionally, first grade children

in the Goldsboro City Schools have been assigned to classes so that the classes would be as nearly comparable as possible as to age range, normal range of ability, and socio-economic status range. However, students were assigned to a school according to their place of residence, which made it impossible to have exactly the same range of students in each class, according to the above characteristics. Due to the cost of transporting children and the problems with parents which might result from this, it was decided to continue the present policy of pupil assignment. Therefore, in the data analysis, there is comparison of total treatment groups and special sub-populations, but no comparison of one classroom with another. Within a school, teachers were randomly assigned to classes, so as to compensate, insofar as possible, for the fact that children were not randomly assigned to classes.

There was a total experimental population of 751 children in 28 classrooms in the study at the beginning of the experimental period. This does not include a number of children who were enrolled after the beginning of school or who had missed parts of the readiness tests. Class size ranged from 26 to 38 pupils, with an average class size of 30 pupils. Table 1 shows the number of classes per school and the teaching method used in each class. From this table, it will be observed that there were 10 classes in the BR approach, 9 in the P approach, and 9 in the SR approach. Of the 10 classes in the BR approach, 5 were white and 5 were Negro, and in the other two approaches, 5 classes were white and 4 were Negro. There were 385 white students and 366 Negro students in the project.

TABLE I

NUMBER OF FIRST-GRADE CLASSROOMS PER SCHOOL

AND METHOD OF INSTRUCTION USED IN EACH CLASSROOM

School	Total Number of Classes	Number of Classes per Method
A	7	2 BR
		2 P
		3 SE
B	6	2 BR
		2 P
		2 SE
C	4	2 BR
		1 P
		1 SE
D, E, F	3 (Per School)	1 BR (Per School)
		1 P (Per School)
		1 SE (Per School)
G	2	1 BR
		1 P

FINAL SAMPLE POPULATION

Two criteria were the major determinants in the selection of the final population for statistical analysis of data:

1. Only subjects who completed all of the tests were included in the final population.
2. Only subjects for whom complete non-test data was available were included in the final population.

However, the actual experimental population varied, depending on the statistical analysis being done. The reason for this was that in cases where there were gaps in data, if there were no gaps in the variables being considered in a particular analysis, that subject was included in the analysis.

The final total population was 681, with 334 white and 347 Negro subjects. In the statistical tables, the actual population for that particular analysis is indicated. Also final population breakdowns by sex, treatment, etc., will be found in the tables.

SCHOOL CHARACTERISTICS

The seven schools in this study are well-equipped with instructional materials, audio-visual equipment, books, etc. Each school has its own library, and services of a librarian. The average per pupil cost of public school education was between $300.00 and $400.00

The length of the school year was 180 days, and the length of the school day was 6 hours. The amount of time per day devoted to language arts instruction in all first grade classrooms was approximately 3 hours, as recommended by the North Carolina Department of Public Instruction. It was impossible to state

actual time per day spent on reading activities, since reading is so interwoven with other language arts areas. However, through classroom visits and study of the teachers' daily schedules, the project director felt that comparable amounts of time per day were spent on reading and related activities in all classrooms.

Of the 180 school days, 140 days were considered as the experimental period. This excluded 20 days at the beginning of the school year, and 20 at the end. Readiness tests were given prior to the beginning of the experimental period and achievement tests immediately following this period.

PLANNING AND SUPERVISION

Prior to the opening of school, a three-day workshop was held for all teachers in the project, and the principals of the schools involved. The staff for the workshop consisted of the superintendent of the Goldsboro City Schools, the project director, a consultant from the School of Education at the University of North Carolina at Chapel Hill, and a representative from the Scott-Foresman Company. The purpose of the workshop was to familiarize teachers with the project, to assign instructional methods to teachers, and then to orient teachers to the particular method of instruction which they would be using, and to work out any final problems with regard to the carrying-out and implementation of the project.

During the school year, meetings of all teachers were held about once a month. Also, throughout the year, meetings of teachers of each experimental group were held.

The project director visited each classroom in the project on an average of three times during the experimental period, for the purpose of observing the reading instruction.

The director made herself available throughout the project to the teachers and school principals for individual conferences with regard to instructional procedures, gathering of statistical data, meeting individual differences, etc.

CLASSROOM METHODOLOGY

The first grade classes were assigned to experimental methods according to the plan in Table 1. Teachers within a school chose the method they would teach, from the three methods.

The North Carolina basal texts--The Scott-Foresman series--were all used in all classes. This basal reading program provides for a sequential development in reading, with reading skills and interests built continuously, from one level to the next.

The teachers, in planning their work, used the basal text guidebooks' suggestions, which develop and present lesson plans based on what is known about the learning processes of children and which follow the following sequence:

1. Preparing for reading--reading readiness.
2. Interpreting the stories.
3. Extending skills in reading.
4. Extending interests in reading.

For each teaching method, the following general plans were used:

BR Approach:

The Scott-Foresman texts, designed for first-grade pupils and

traditionally used supplementary materials were used to teach reading in the ten classes which made up this group. Students were taught using the plans, methods, and materials, which had previously been used in all first grade classrooms. This group was considered as the control group.

P Approach:

The basal text program plus an intensive phonics program in reading activities was used in addition to and correlated with the basal text, in this group. The phonics program used was the Murphy-Durrell Speech-to-Print materials. Orientation of teachers to this program placed emphasis on the following concepts, suggested and advocated by researchers in the area of phonics:

1. Phonics is only one of several good methods of teaching word recognition.
2. A program of phonics is essential to the total program of reading instruction.
3. As in other reading activities, readiness for phonics must be established.
4. Teachers should use a systematic approach to phonics.

SE Approach:

In this group, the basal text program used in the BR and P approaches, plus the Murphy-Durrell phonics program used in the P approach, were used. In addition, a "sensory experience" approach was used, in which the teacher supplemented her reading program with many aural, oral, and visual teaching aids, materials, etc., which appealed to the various senses.

The reading program for this group was further supplemented by the use of audio-visual materials and equipment--tape recordings, filmstrips, movies, records, supplementary library books, games, etc.

TESTS ADMINISTERED *

All tests were administered by members of a specially trained testing team, under the supervision of the school psychologist. The testing program to be followed was developed by the 27 directors of the cooperative projects, at a meeting in Minneapolis in June, 1964.

The following tests were administered to all students at the end of the 20-day pre-experimental period:

Readiness--

Murphy-Durrell Diagnostic Reading Readiness Test

Metropolitan Readiness Test, Form A

Thurstone Pattern Copying Test

Thurstone Identical Forms Test

Intelligence--

Pintner-Cunningham Primary Test

The Murphy-Durrell, Metropolitan, and Thurstone readiness tests were all 1964 editions. Thus, there is no discussion of them in Buros' Mental Measurements Yearbook, of which the latest edition was published in 1960. However, the project directors felt that a single measure of readiness would not tap all areas that were important. Thus, it was agreed to use a composite of measures, in the hope of obtaining a more complete assessment of readiness.

The Pintner-Cunningham Primary Test, 1964 revision, was used as the measure of intelligence. Harcourt, Brace, and World revised the norms for this test in 1965. However, scores had to be reported to the University of Minnesota before the new norms were received. Therefore, raw score data, rather than I. Q., was used in the data analysis.

During the experimental period, the Scott-Foresman Basic Reading Tests for The Three Pre-Primers, Fun with Our Friends, and More Fun with Our Friends. (These tests were not used in the other projects.) In accordance with the suggestions in the manuals for administering these tests, they were to be administered to each group of students within a class upon completion by that group of the book for which the test was designed. These tests were teacher-administered. There was some misunderstanding as to when these tests were to be administered, on the part of teachers, and in many cases they were not administered upon the students' completion of a book. Therefore, the results of these tests are not included in the analysis of data.

At the end of the experimental period, the following subtests of the Stanford Achievement Test, Primary I Level, Form X were administered to all first-graders:

Word Reading

Paragraph Meaning

Vocabulary

Spelling

Word Study Skills

* A list of tests and test publishers appears in Appendix A.

Since there was no recommendation in the test manual for estimating a single composite socre on reading achievement, the subtest scores were considered separately in the final data analysis.

A number of other tests were administered as part of the cooperative aspect of the research. However, they did not relate specifically to this study, and thus are not included in the data analysis. However, these test were administered according to the cooperative testing schedule, and data was retained on them. It is anticipated that this data will be studied in the near future. Thus brief mention of the measures is made here. The San Diego Teacher Inventory of Approaches to Reading was administered to all teachers in the study, prior to the beginning of school, in the summer of 1964. The San Diego Reading Attitude Inventory was administered to all children in the study, during the experimental period. It was administered by the classroom teacher in each classroom at a time when reading instruction would not be taking place. A series of tests was administered individually to a stratified random sample of 20 boys and 20 girls in each treatment group (a total of 120), at the end of the experimental period. These tests were: (1) the Gates Word Pronunciation Test, (2) the Fry Oral Test of Phonetically Regular Words, (3) the Gilmore Oral Reading Test, (4) the Karlsen Phonemic Word Test. This testing was completed within seven days after the end of the experimental period. One member of the testing team administered all of the Gilmore tests, and the other members administered the other three tests. Also, at the end of the experimental period, two writing

samples were obtained from all pupils in the study. The directions for obtaining these samples were obtained from a sub-committee of the project directors. This measure was administered by the classroom teachers. The writing samples for the sample population described above were sent to the University of Minnesota Coordination Center for analysis.

The scoring of all tests administered for this study was done by members of the project staff. Each test was scored by one staff member and rechecked by another staff member, with the exception of the Thurston Pattern Copying Test, which was scored by the project director.

NON-TEST DATA

As much non-test data as possible was obtained on each teacher and each child in this study. It was not anticipated that all of this data could be used, or would even be of value, in answering the questions posed in this particular study. However, it was felt that some of it might be of value in follow-up studies and as material for future use by teachers in the guidance and counseling of individual students and in planning instruction to meet individual needs. A summary of all data obtained will be found in Appendix C.

RECORDING OF DATA

All data gathered throughout this study, on teachers and children, was coded according to instructions from the University of Minnesota Coordination Center (See Appendix C) and recorded on data sheets. I. B. M. cards were made from these sheets, and were computer-analyzed at the University of Minnesota. Results of these analyses are reported throughout the remainder of this project.

CHAPTER V

ANALYSIS OF DATA

The statistical analyses were performed by computer according to the University of Minnesota version of MANOVA. Multivariate analysis of variance, using a general linear hypothesis model, was the major statistical procedure used in this study.

A two-way analysis of variance (ANOVA)-sex x race-of pre-measures and Pintner raw score I. Q. was run. The variables were as follows:

1. Murphy-Durrell Identification of Phonemes - (rights minus wrongs)
2. Murphy-Durrell Capital Letter Names - (number correct)
3. Murphy-Durrell Lower Case Letter Names - (number correct)
4. Murphy-Durrell Total Capital and Lower Case Letters - (number correct)
5. Murphy-Durrell Learning Rate - (number correct)
6. Thurstone Pattern Copying - (number correct)
7. Thurstone Identical Forms - (number correct)
8. Metropolitan Word Meaning - (number correct)
9. Metropolitan Listening - (number correct)
10. Metropolitan Matching - (number correct)
11. Metropolitan Number - (number correct)
12. Metropolitan Copying - (number correct)
13. Metropolitan Alphabet - (number correct)
14. Metropolitan Total - (number correct)

15. Pintner Raw Score I. Q.

Also included in this analysis were:

16. Repeater status

17. Maturity index

18. Home environment

F-ratios for the variables considered are found in Table 2. The large race differences and the sex differences indicated that both race and sex should be blocked, and this procedure was generally followed for the remainder of the analyses.

The correlation matrices for the eighteen variables listed above are presented in Table 3 (White Males), Table 4 (White Females), Table 5 (Negro Males), and Table 6 (Negro Females). These matrices indicate non-significant correlations between Repeater Status (Variable 16) and all other variables for all subjects. They show fairly high correlations between I. Q. and the other variables. A number of very high intercorrelations on the Murphy-Durrell subtests were found. A pooled correlation of all subjects was made. However, since the four groups were rather dissimilar, it was decided that more information could be gained from the separate matrices.

A four-way analysis of variance--treatment x repeater x sex x race--of pre-measures, achievement measures, and I. Q. was run. The variables were as follows:

1. Murphy-Durrell Identification of Phonemes

2. Murphy-Durrell Total Capital and Lower Case Letters

3. Murphy-Durrell Learning Rate

4. Thurstone Pattern Copying

TABLE 2

F-RATIOS FOR PRE-MEASURES, I. Q., REPEATER-STATUS, MATURITY INDEX, AND HOME ENVIRONMENT

Variable	Sex	Race	Sex x Race
M-D Phonemes	.3567	199.2761	.1268
M-D Capital Letters, Names	5.9799*	62.9287**	.1592
M-D Lower Case Letter Names	3.1539	48.8879**	.3014
M-D Total Capital & Lower Case	3.3922	59.7247**	.0283
M-D Learning Rate	6.0045*	89.7490**	.0007
Thurstone Pattern Copying	.5098	130.3293**	.0205
Thurstone Identical Forms	.2461	99.9233**	.0050
Met. Word Meaning	2.9764	290.9401**	.4012
Met. Listening	.0010	110.4448**	.6959
Met. Matching	.0063	152.4679**	.6450
Met. Numbers	.1425	227.1987**	.1827
Met. Copying	1.0510	126.7163**	.0083
Met. Alphabet	2.2283	78.5176**	.0246
Met. Total	.0763	255.7431**	.0410
Pintner I. Q.	.2988	400.0227**	.3061
Repeater Status	.6895	4.5681*	.4239
Maturity Index	13.0217**	4.2688*	.3743
Home Environment	.2189	26.1172**	.3559

* These differences are significant at the .05 level.
** These differences are significant at the .01 level.

5. Thurstone Identical Forms
6. Metropolitan Word Meaning
7. Metropolitan Listening
8. Metropolitan Matching
9. Metropolitan Numbers
10. Metropolitan Copying
11. Metropolitan Total
12. Stanford Word Reading
13. Stanford Paragraph Meaning
14. Stanford Vocabulary
15. Stanford Spelling
16. Stanford Word Study Skills
17. I. Q.

There were a number of significant F-ratios at the .01 level. These were as follows:

1. Treatment effect - Variables 12, 14, and 15
2. Repeater effect - Variables 6, 12, 13, 14, 15, 16, and 17
3. Sex effect - All Variables
4. Race effect - All Variables
5. Treatment x Repeater - Variable 14
6. Treatment x Sex - None
7. Treatment x Race - Variables 4, 5, 12, and 15
8. Repeater x Sex - None
9. Repeater x Race - Significant over-all, but no specific variables
10. Sex x Race - None
11. Treatment x Repeater x Sex - Variable 1
12. Treatment x Repeater x Race - None
13. Treatment x Sex x Race - None

TABLE 3

CORRELATION MATRIX FOR WHITE MALES FOR THE READINESS VARIABLES, I. Q., REPEATER, MATURITY, AND HOME ENVIRONMENT

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1.	1.00	.57	.60	.60	.45	.43	.23	.41	.39	.50	.47	.40	.56	.60	.41	.00	.45	.32
2.		1.00	.88	.97	.48	.47	.23	.45	.32	.57	.63	.56	.80	.76	.41	.12	.52	.47
3.			1.00	.97	.56	.47	.23	.46	.31	.55	.64	.55	.81	.76	.41	.15	.55	.42
4.				1.00	.54	.48	.23	.46	.33	.57	.65	.57	.84	.78	.42	.14	.55	.45
5.					1.00	.40	.13	.27	.23	.40	.43	.33	.46	.48	.25	.20	.46	.20
6.						1.00	.39	.35	.40	.60	.49	.63	.49	.65	.53	.12	.50	.28
7.							1.00	.23	.19	.34	.32	.31	.25	.36	.35	.10	.28	.09
8.								1.00	.45	.40	.45	.44	.46	.67	.45	-.11	.39	.53
9.									1.00	.37	.42	.40	.36	.60	.44	-.02	.31	.40
10.										1.00	.63	.55	.61	.81	.50	.06	.53	.37
11.											1.00	.49	.68	.85	.45	.10	.52	.42
12.												1.00	.55	.73	.52	.16	.54	.41
13.													1.00	.85	.41	.18	.54	.45
14.														1.00	.60	.10	.63	.55
15.															1.00	-.11	.52	.48
16.																1.00	.13	-.22
17.																	1.00	.38
18.																		1.00

df 180
.01-.193 with 175 df
.01-.181 with 200 df

TABLE 4

CORRELATION MATRIX FOR WHITE FEMALES FOR THE READINESS VARIABLE, I. Q., REPEATER, MATURITY, AND HOME ENVIRONMENT

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1.	1.00	.36	.32	.56	.16	.46	.33	.42	.15	.42	.51	.30	.53	.58	.50	-.10	.48	.33
2.		1.00	.90	.58	.75	.42	.29	.62	.64	.34	.37	.36	.48	.49	.40	.04	.37	.31
3.			1.00	.56	.77	.44	.28	.61	.65	.38	.38	.34	.49	.49	.36	.07	.39	.30
4.				1.00	.09	.31	.26	.46	.10	.46	.61	.46	.80	.73	.47	.11	.51	.41
5.					1.00	.38	.21	.44	.71	.22	.17	.15	.14	.20	.25	.05	.19	.14
6.						1.00	.45	.44	.38	.49	.47	.56	.31	.55	.60	-.05	.46	.32
7.							1.00	.38	.24	.46	.46	.40	.39	.48	.47	-.12	.46	.24
8.								1.00	.49	.46	.52	.46	.49	.69	.50	-.12	.42	.51
9.									1.00	.27	.31	.21	.17	.38	.39	-.05	.32	.25
10.										1.00	.58	.55	.50	.77	.52	.05	.42	.30
11.											1.00	.50	.61	.86	.63	-.07	.62	.45
12.												1.00	.50	.70	.57	.06	.46	.34
13.													1.00	.81	.47	.06	.52	.41
14.														1.00	.69	.00	.65	.53
15.															1.00	-.20	.63	.54
16.																1.00	-.18	-.27
17.																	1.00	.62
18.																		1.00

df-152
.01-208 with 150 df

TABLE 5

CORRELATION MATRIX FOR NEGRO MALES FOR THE READINESS VARIABLES, I. Q., REPEATER, MATURITY, AND HOME ENVIRONMENT

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1.	1.00	.51	.49	.51	.34	.42	.37	.33	.42	.46	.51	.40	.44	.57	.42	.10	.32	.14
2.		1.00	.89	.97	.49	.52	.51	.41	.43	.49	.64	.60	.83	.78	.65	.14	.50	.27
3.			1.00	.96	.53	.51	.47	.41	.43	.56	.61	.59	.81	.78	.65	.08	.48	.34
4.				1.00	.52	.53	.50	.43	.45	.54	.64	.61	.85	.81	.66	.12	.51	.32
5.					1.00	.35	.29	.22	.30	.38	.49	.31	.48	.51	.48	.07	.30	.15
6.						1.00	.55	.29	.39	.59	.58	.71	.50	.68	.65	.09	.48	.28
7.							1.00	.28	.53	.59	.55	.53	.52	.67	.63	.09	.47	.26
8.								1.00	.47	.30	.40	.28	.43	.58	.34	.11	.36	.28
9.									1.00	.45	.50	.35	.52	.71	.56	.06	.41	.25
10.										1.00	.53	.58	.52	.76	.62	.01	.43	.33
11.											1.00	.56	.64	.84	.67	.17	.49	.23
12.												1.00	.55	.72	.60	.24	.42	.28
13.													1.00	.85	.62	.18	.48	.35
14.														1.00	.77	.16	.58	.38
15.															1.00	.03	.64	.39
16.																1.00	.03	-.14
17.																	1.00	.31
18.																		1.00

df-161
.01-.208 with 150 df
.01-.193 with 175 df

TABLE 6

CORRELATION MATRIX FOR NEGRO FEMALES FOR THE READINESS VARIABLES, I. Q., REPEATER, MATURITY, AND HOME ENVIRONMENT

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1.	1.00	.61	.62	.63	.37	.54	.47	.15	.35	.52	.54	.50	.60	.63	.45	.01	.29	.43
2.		1.00	.87	.97	.46	.61	.52	.27	.42	.58	.63	.65	.80	.79	.59	.06	.46	.42
3.			1.00	.96	.47	.63	.51	.28	.36	.60	.60	.61	.83	.78	.56	-.01	.48	.43
4.				1.00	.48	.64	.53	.28	.40	.61	.63	.65	.84	.81	.59	.03	.49	.44
5.					1.00	.43	.39	.21	.20	.42	.42	.44	.49	.51	.43	-.03	.37	.31
6.						1.00	.59	.21	.43	.60	.56	.63	.66	.72	.66	-.08	.43	.49
7.							1.00	.29	.44	.64	.58	.48	.55	.69	.53	.01	.36	.38
8.								1.00	.28	.32	.28	.20	.27	.45	.28	-.05	.25	.24
9.									1.00	.44	.47	.37	.41	.63	.44	.05	.36	.26
10.										1.00	.59	.53	.64	.83	.57	-.02	.43	.40
11.											1.00	.56	.64	.83	.51	.10	.35	.28
12.												1.00	.63	.74	.61	.09	.49	.37
13.													1.00	.87	.62	.01	.48	.40
14.														1.00	.70	.04	.53	.44
15.															1.00	-.08	.50	.48
16.																1.00	-.02	-.23
17.																	1.00	.41
18.																		1.00

df-184
.01-.193 with 175 df
.01-.181 with 200 df

14. Repeater x Sex x Race - None

15. Treatment x Repeater x Sex x Race - None

Because of the above interactions, which have been described, especially on the pre-measures, the above analysis could not be interpreted.

The analyses which were used in the final interpretations of data were as follows:

1. Whites only--2-way analysis of variance (Sex x Treatment) for pre-measures and post-measures separately.
2. Negroes only--2-way analysis of variance (Sex x Treatment) for pre-measures and post-measures separately.

Table 7 gives the F-ratios for the 2-way analysis of variance for white subjects on the Murphy-Durrell Readiness Test. Table 8 gives the same information for the Thurstone Tests, and Table 9 for the Metropolitan Test. Tables 10, 11, and 12 give the same information for Negro subjects.

Because of the significant F-ratios on certain readiness measures, which were different for Negro and white subjects, co-variance was used in the 2-way analysis of variance for post-measures. For white subjects, the co-variance involved Variables 4 (Thurstone Pattern Copying) and 5 (Thurstone Identical Forms). It will be noted from Tables 7, 8, and 9 that these were only pre-measure variables with significant F-ratios. For Negro subjects, the co-variance involved Variables 1 (Murphy-Durrell Identification of Phonemes), 6 (Metropolitan Word Meaning), 8 (Metropolitan Matching), 9 (Metropolitan Numbers), and 11 (Metropolitan Total). It will be noted from Tables 10, 11, and 12

TABLE 7

F-RATIOS FOR SEX X TREATMENT ANALYSIS OF VARIANCE FOR THE MURPHY-DURRELL READINESS TEST, FOR WHITE SUBJECTS

Effect	Identification of Phonemes	Total Capital and Lower Case Letters	Learning Rate	F for .01 Level	df
Treatment	1.3464	1.0492	1.4134	4.71	2 and 284
Sex	1.2123	2.2342	3.0218	6.76	1 and 284
Treatment x Sex	1.6782	.9277	1.7694	4.71	2 and 284

TABLE 8

F-RATIOS FOR SEX X TREATMENT ANALYSIS OF VARIANCE FOR THE THURSTONE READINESS TESTS, FOR WHITE SUBJECTS

Effect	Pattern Copying	Identical Forms	F for .01 Level	df
Treatment	7.5736*	9.6930*	4.71	2 and 284
Sex	1.3303	.6022	6.76	1 and 284
Treatment x Sex	.9735	1.2814	4.71	2 and 284

*Significant at .01 level.

TABLE 9

F-RATIOS FOR SEX X TREATMENT ANALYSIS OF VARIANCE FOR THE METROPOLITAN READINESS TEST, FOR WHITE SUBJECTS

Effect	Word Reading	Listening	Matching	Numbers	Copying	Total	F for .01 Level	df
Treatment	.7157	.0144	.4782	1.2659	1.7916	.9711	4.71	2 and 284
Sex	.0296	2.0829	.2774	.3014	1.7977	.5428	6.76	1 and 284
Treatment x Sex	.3855	1.6874	2.3747	.3437	2.0328	.9476	4.71	2 and 284

TABLE 10

F-RATIOS FOR SEX X TREATMENT ANALYSIS OF VARIANCE FOR THE MURPHY-DURRELL READINESS TEST, FOR NEGRO SUBJECTS

Effect	Identification of Phonemes	Total Capital and Lower Case Letters	Learning Rate	F for .01 Level	df
Treatment	8.4050*	1.2382	.7648	4.71	2 and 295
Sex	3.5997	3.1059	10.2981*	6.76	1 and 295
Treatment x Sex	.3906	.3923	1.1478	4.71	2 and 295

*Significant at .01 level.

TABLE 11

F-RATIOS FOR SEX X TREATMENT ANALYSIS OF VARIANCE FOR THE THURSTONE READINESS TESTS, FOR NEGRO SUBJECTS

Effect	Pattern Copying	Identical Forms	F for .01 Level	df
Treatment	1.6577	3.3041	4.71	2 and 295
Sex	1.2124	1.4356	6.76	1 and 295
Treatment x Sex	.5055	.5927	4.71	2 and 295

TABLE 12

F-RATIOS FOR SEX X TREATMENT ANALYSIS OF VARIANCE FOR THE METROPOLITAN READINESS TEST, FOR NEGRO SUBJECTS

Effect	Word Meaning	Listening	Matching	Numbers	Copying	Total	F for .01 Level	df
Treatment	12.8910*	2.9776	5.1162*	4.6332**	.3419	6.4134*	4.71	2 and 295
Sex	.6377	.3632	1.9178	2.0783	1.7197	1.7797	6.76	1 and 295
Treatment x Sex	1.1618	1.1108	.4847	1.2141	.7461	.5090	4.71	2 and 295

*Significant at .01 level.
**Significant at .05 level.

that these were the pre-measure variables with significant F-ratios.

Table 13 gives the F-ratios for the 2-way analysis of variance for white and for Negro subjects on the post-measures (Stanford Achievement Test--subtest scores). For white subjects, treatment differences significant at the .01 level of confidence were found on Word Reading, Vocabulary, Spelling, and Word Study Skills, but not on Paragraph Meaning, although this was significant at the .05 level. For Negro subjects, treatment differences significant at the .01 level of confidence were found on Word Reading, Paragraph Meaning, Vocabulary, and Spelling, but not on Word Study Skills at either the .01 or .05 level.

Since significant F-ratios were found for the three methods of instruction (or treatments)--BR approach, P approach, and SE approach--t-tests were run. This was done to determine where the significant differences between means occurred. Table 14 gives the mean and variance for each method of instruction. The scores are given separately for Negro and white subjects, and for male and female subjects. Table 15 gives the significant t-scores for the BR and P approaches, the P and SE approaches, and the BR and SE approaches.

Table 16 shows the mean raw scores and the equivalent grade score conversions (from the test booklets) for each subtest of the Stanford Achievement Test. This table was included simply to present a general notion of the grade levels at which children in the different methods were achieving at the end of the year. However, since grade scores do not relate on a one-to-one basis to raw scores, it is entirely possible that, had grade scores been used throughout this analysis, the results would have been different.

TABLE 13

F-RATIOS FOR TWO-WAY ANALYSIS OF VARIANCE ON STANFORD ACHIEVEMENT TEST, FOR WHITE AND NEGRO SUBJECTS.

Effect Name	Word Reading	Paragraph Meaning	Vocabulary	Spelling	Word Study Skills	F .01	df
White							
Treatment	8.8190*	3.6666	6.8488*	4.8249*	8.7116*	4.71	2 and 282
Sex	5.7556	13.5172*	.3748	9.4515*	.9598	6.76	1 and 282
Treatment x Sex	.2148	.8430	.8476	1.3029	.5754	4.71	2 and 282
Negro							
Treatment	13.3593*	6.9056*	6.7749*	10.5535*	2.6798	4.71	2 and 290
Sex	2.7607	14.8235*	.1845	7.8821*	2.2326	6.76	1 and 290
Treatment x Sex	.1879	.1281	.6361	.9375	1.1553	4.71	2 and 290

* Significant at .01 level

TABLE 14

MEANS AND VARIANCES FOR SUBTESTS OF THE STANFORD ACHIEVEMENT TEST FOR THE BR, P, AND SE APPROACHES

	Negro						White					
	Boys		Girls		Total		Boys		Girls		Total	
	M*	V*	M	V	M	V	M	V	M	V	M	V
Word Reading												
BR	14.68	34.2	15.14	37.7	14.95	36.2	18.88	51.8	19.96	28.3	19.37	41.4
P	12.34	49.4	13.63	31.7	13.01	40.3	19.74	42.0	21.87	31.0	20.67	37.2
SE	16.19	44.5	17.33	44.7	16.75	44.6	22.10	25.4	23.65	31.9	22.88	28.6
Paragraph Meaning												
BR	14.07	35.6	17.15	55.7	15.85	47.2	20.07	77.2	22.33	74.0	21.07	75.8
P	11.57	45.5	14.67	52.6	13.17	49.2	18.83	70.4	23.77	65.6	20.98	68.3
SE	15.16	78.0	17.48	75.9	16.31	77.0	22.40	58.8	25.12	73.0	23.76	65.9
Vocabulary												
BR	15.80	23.9	15.19	19.5	15.45	21.4	20.19	48.5	21.01	19.4	20.55	35.6
P	15.54	40.8	16.23	34.7	15.90	37.6	20.59	31.4	21.60	23.7	21.03	28.0
SE	18.20	25.3	17.50	29.1	17.85	27.2	23.74	38.7	22.90	27.2	23.32	33.0
Spelling												
BR	10.52	35.8	11.11	30.0	10.86	32.5	9.83	35.6	10.89	27.9	10.30	32.2
P	7.11	36.3	8.69	41.4	7.93	38.9	10.82	34.3	12.24	30.3	11.44	32.6
SE	9.32	44.8	11.77	37.2	10.53	41.0	11.03	34.1	14.41	16.6	12.72	25.4
Word Study Skills												
BR	30.44	54.8	30.00	71.0	30.19	64.2	32.83	73.6	34.26	75.1	33.46	72.2
P	26.55	11.3	29.23	78.4	27.93	46.0	33.74	54.3	33.34	59.4	33.57	56.5
SE	27.55	73.8	29.06	103.0	28.30	88.3	36.65	48.4	38.26	72.3	37.46	60.3
Number of Subjects												
BR	42		57		99		55		44		99	
P	45		48		93		58		45		103	
SE	55		54		109		44		44		88	

* M = Mean
** V = Variance

TABLE 15

T-SCORES FOR COMPARISON OF AVERAGE READING ACHIEVEMENT FOR THE BR, P, AND SE APPROACHES

	NEGRO			WHITE		
	Boys	Girls	Total	Boys	Girls	Total
Word Reading						
BR-P	NS	NS	2.17*	NS	NS	NS
P-SE	2.79**	3.03**	4.07**	NS	NS	3.56**
BR-SE	NS	NS	2.05*	2.62*	3.15**	4.07**
Paragraph Meaning						
BR-P	NS	NS	2.68**	-	-	-
P-SE	2.30*	NS	2.83**	-	-	-
BR-SE	NS	NS	NS	-	-	-
Vocabulary						
BR-P	NS	NS	NS	NS	NS	NS
P-SE	2.27*	NS	2.41*	2.64**	NS	2.85**
BR-SE	2.36*	2.46*	3.51**	2.67**	NS	3.23**
Spelling						
BR-P	2.65**	2.05*	3.39**	NS	NS	NS
P-SE	NS	2.47*	2.91**	NS	2.12*	NS
BR-SE	NS	NS	NS	NS	3.50**	3.09**
Word Study Skills						
BR-P	-	-	-	NS	2.04*	3.18**
P-SE	-	-	-	NS	2.86**	2.18*
BR-SE	-	-	-	NS	3.50**	3.36**
Number of Subjects						
BR	42	57	99	55	44	99
P	45	48	93	58	45	103
SE	55	54	109	44	44	88

* Significant beyond .05 level
** Significant beyond .01 level

TABLE 16

MEAN RAW SCORES CONVERTED TO GRADE SCORES ON STANFORD SUBTESTS

	Mean Raw Score			Grade Score			Mean Raw Score			Grade Score		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
Word Reading												
BR	14.68	15.14	14.95	1.5	1.5	1.5	18.88	19.96	19.37	1.7	1.7	1.7
P	12.34	13.63	13.01	1.4	1.5	1.4	19.74	21.87	20.67	1.7	1.8	1.8
SE	16.19	17.33	16.75	1.6	1.6	1.6	22.10	23.65	22.88	1.8	1.9	1.9
Paragraph Meaning												
BR	14.07	17.15	15.85	1.6	1.7	1.6	20.07	22.33	21.07	1.7	1.8	1.8
P	11.57	14.67	13.17	1.5	1.6	1.6	18.83	23.77	20.98	1.7	1.9	1.8
SE	15.16	17.48	16.31	1.6	1.7	1.6	22.40	25.12	23.76	1.8	1.9	1.9
Vocabulary												
BR	15.80	15.19	15.45	1.5	1.5	1.5	20.19	21.01	20.55	1.9	2.0	2.0
P	15.54	16.23	15.90	1.5	1.5	1.5	20.59	21.60	21.03	2.0	2.1	2.0
SE	18.20	17.50	17.85	1.7	1.6	1.7	23.74	22.90	23.32	2.3	2.2	2.2
Spelling												
BR	10.52	11.11	10.86	1.8	1.8	1.8	9.83	10.89	10.30	1.7	1.8	1.7
P	7.11	8.69	7.93	1.6	1.7	1.6	10.82	12.24	11.44	1.8	1.9	1.8
SE	9.32	11.77	10.53	1.7	1.9	1.8	11.03	14.41	12.72	1.8	2.1	2.0
Word Study Skills												
BR	30.44	30.00	30.19	1.5	1.5	1.5	32.83	34.26	33.46	1.7	1.8	1.7
P	26.55	29.23	27.93	1.4	1.5	1.5	33.74	33.34	33.57	1.8	1.7	1.8
SE	27.55	29.06	28.30	1.5	1.5	1.5	36.65	38.26	37.46	1.9	2.0	1.9

However, the use of grade scores would have resulted in an inaccurate picture. Therefore, this table is not an "official" one, with regard to interpretation of results, but merely to show what the raw scores actually mean, in terms of level of reading achievement.

CHAPTER VI

RESULTS

As stated in Chapter III, the purpose of this study was to evaluate the effectiveness of three approaches to teaching reading in first grade-a basal reader approach (BR), a basal reader plus an intensive phonics approach (P), and a basal reader plus intensive phonics plus a sensory experience approach (SE).

Because of the data analysis problems (discussed in Chapter V), it was not possible to test the hypotheses as stated. This was due to two major causes. First, the large interactions of sex and race and the large race differences rendered a number of MANOVA analyses uninterpretable. Secondly, significant F-ratios for treatment (method of instruction) on a number of the readiness measures were not controlled by co-variance in a number of the MANOVA analyses. Therefore, these analyses could not be used. The analyses discussed in Chapter V were the only ones which could be used in the final data interpretation. These analyses, which were done for Negroes and whites separately, because of significant differences, could not be combined to obtain F-ratios for total population. For reasons stated above, comparisons of total boys vs. total girls could not be made.

The following findings are based on the information of Tables 14 and 15. Although they may not unequivocally confirm or disprove the hypotheses stated in Chapter III, they do give some bases on which to reject these hypotheses. (The findings are based on the t-scores which were significant at the .01 level of confidence.)

The findings are as follows:

1. There were no significant differences between Approaches BR and P for white boys, white girls, or total white population.
2. There were significant differences between Approaches BR and P for total Negro population on Word Reading and Paragraph Meaning, and for Negro boys, Negro girls, and total Negro population on Spelling. These differences all favored Approach BR.
3. There were significant differences for white boys on Vocabulary and Word Study Skills, for white girls on Spelling and Word Study Skills, and for total white population on Word Reading, Vocabulary, and Word Study Skills, between Approaches P and SE. These differences all favored Approach SE.
4. There were significant differences for Negro boys on Word Reading, Paragraph Meaning, and Vocabulary; for Negro girls on Word Reading, Paragraph Meaning, Vocabulary, and Spelling, between Approaches P and SE. These differences all favored Approach SE.
5. There were significant differences for white boys, white girls, and total white population on Word Reading and Word Study Skills, for white boys and total white population on Vocabulary; and for white girls and total white population on Spelling, between Approaches BR and SE.
6. There were significant differences for total Negro population on Word Reading and for Negro boys, Negro girls, and total Negro population on Vocabulary, between Approaches BR and SE. These differences all favored Approach SE.

CHAPTER VII

CONCLUSIONS AND SUMMARY

From the results presented in the preceding chapter, it can be seen that no one of the three approaches was consistently superior to the other two, in all areas of achievement. However, significant differences were found in a sufficient number of areas to justify drawing some conclusions as to the relative merits of the different approaches.

However, there were some problems in this study, which plague most research on methods of instruction. Because of these problems, the results may be only artifacts of the particular situation in which they occurred. Among these problems is the teacher variable. In this study, every attempt was made to keep teachers informed as to the particulars of the approach to instruction which they were following. However, it was an impossibility to insure that all teachers in a particular approach were following the same procedures. This was done, insofar as possible, but this variable could not be completely controlled. Also, although it was ascertained that the populations for the three approaches were not significantly different on mean chronological age, mean I. Q., and mean level of home environment, and although Negroes and whites, and boys and girls were considered separately, and readiness differences were controlled for, still, all variables could not be controlled. Thus, it is possible that, in addition to differences in methodology, some other variable was operating, which contributed to the differences in results for the three approaches.

The following conclusions are made with the full realization that, if this study were replicated, insofar as this would be possible, with different children and different teachers in a different school system, quite different results might be obtained. Thus, the following conclusions would seem valid for first grade children in the Goldsboro City Schools, but may not prove valid for other school systems.

First, the sensory experience approach appears most effective of the three methods, for Negroes and whites, and for boys and girls. (It is assumed that, since this approach was best for Negroes and whites separately, it would be best for these two groups as a whole, although this could not be tested statistically.) The basal reader approach was second best for Negro subjects--both boys and girls, with the phonics approach being least effective. For white subjects, there was no difference between the basal reader and phonics approaches. Although all of the subtests did not show significant differences, there were a sufficient number to indicate superiority of one approach. Also, where the differences were not significant, the difference was still in favor of the sensory experience approach, in all instances.

In conclusion, it is quite possible that this study has really proved nothing new. At least token acceptance has been given for a long time to the theory that the more varied experiences a child has, the more he will learn. In reading, an approach which depends mainly on a "sight method", as did the basal reader approach in this study, or on a method combining the "sight method" with phonics alone, as did the phonics approach in this study, will not reach all children,

either. However, this study at least indicated that it does seem more beneficial than either of the other two approaches.

It is hoped that further research can be done, which will test the effectiveness of these approaches with certain subpopulations. This was the intent of this study, but the problems of data analysis, which were not discovered in time for re-analysis for inclusion in this report, prevented this. It is not the intent of the researchers to imply in this study that the sensory experience approach is best for all children, but rather that further study should be done to determine the types of children who would profit most from each of the three approaches described above.

APPENDIX A

TESTS AND TEST PUBLISHERS

TESTS AND PUBLISHERS

Intelligence Test

1. Pintner Cunningham Primary Test, Form A (General Ability Tests Revised).
   Harcourt, Brace, and World, Inc., New York, N. Y.

Readiness Tests

1. Metropolitan Readiness Test
   Harcourt, Brace, and World, Inc., New York, N. Y.

2. Murphy-Durrell Diagnostic Reading Readiness Test
   Harcourt, Brace, and World, Inc., New York, N. Y.

3. Thurstone Primary Mental Abilities Test (Pattern Copying and Identical Forms subtests).
   Harcourt, Brace, and World, Inc., New York, N. Y.

Reading Achievement

1. Stanford Achievement Test, Primary I Level, Form X
   Harcourt, Brace, and World, Inc., New York, N. Y.

Other tests, which were part of the Cooperative Study, but not a part of the data analysis of this study: (These were administered only to a small sample of students.)

2. Gates Word Pronunciation Test
   Designed for Office of Education studies.

3. Gilmore Oral Reading Test, Form A
   Harcourt, Brace, and World, Inc., New York, N. Y.

4. Karlsen Phonemic Word Test
   Designed for Office of Education studies.

5. Phonetically Regular Words Oral Reading Test
   Designed for Office of Education studies.

A number of other measures were given as part of the Cooperative Study. However, since these were not used specifically in this study, they are not included here. A complete list of these tests may be obtained from Dr. Robert Dykstra, College of Education, Department of Elementary Education, University of Minnesota, Minneapolis, Minnesota.

APPENDIX B

SCOTT-FORESMAN BASAL READER PROGRAM

SCOTT-FORESMAN BASAL READER PROGRAM

A. The readiness books

1. We Read Pictures
2. We Read More Pictures
3. Before We Read

B. Beginning reading--the pre-primers

1. Sally, Dick, and Jane
2. Fun with Our Family
3. Fun Wherever We Are

Supplementary materials

1. Think-and-Do Book--a workbook
2. Guess Who (Used only with those children who, after studying the above books, were not yet ready for the primer.)

C. Primer

1. Fun with Our Friends

D. First Reader

1. More Fun with Our Friends

E. Other Materials

1. Book--Time for Poetry (for teacher's use)
2. My Little Pictionary (a picture dictionary for first grade)
3. Big Book and Card Holder (for teacher's use)

APPENDIX C

DATA CARD CODES

I. INITIAL DATA

Column

1-2 Project Identification Number (See list of Directors below)

01 Elizabeth Anne Bordeaux, Goldsboro, N. C. (City Schools)
02 Jeane S. Chall, City University of New York
03 Donald L. Cleland, University of Pittsburgh
04 Edward Fry, Rutgers - The State University N. J.
05 Harry T. Hahn, Oakland Schools, Pontiac, Michigan
06 Albert J. Harris, City University of New York
07 Robert B. Hayes, Department of Public Instruction, Harrisburg, Pa.
08 Arthur W. Heilman, Pennsylvania State University
09 Thomas D. Horn, University of Texas
10 William M. Kendrick, San Diego County Department of Education
11 James B. Macdonald, University of Wisconsin
12 John G. Manning, Fresno State College
13 Sister M. Marita, Marquette University
14 Albert J. Mazurkiewicz, Lehigh University
15 Roy McCanne, Consultant, Colorado State Department of Education
16 Katherine A. Morrill, Moses Y. Leach School, Wallingford, Conn.
17 Helen A. Murphy, Boston University
18 Olive S. Niles, Springfield, Massachusetts Public Schools
19 Hale C. Reid, Cedar Rapids, Iowa Public Schools
20 Robert B. Ruddell, University of California
21 J. Wesley Schneyer, University of Pennsylvania
22 William D. Sheldon, Syracuse University
23 George D. Spache, University of Florida
24 Doris U. Spencer, Johnson State College, Vermont
25 Russell G. Stauffer, University of Delaware
26 Harold J. Tanyzer, Hofstra University
27 Nita M. Wyatt, University of Kansas

3-4 School number (within each project)
Directions: Please assign each building a two-digit number, keep a copy of this list with the assigned numbers and send a copy to Minneapolis.

5 Classroom number (within each building in each project)
Directions: Please assign each classroom within each school used in the project a one-digit number, keep a copy of this list and send a copy to Minneapolis.

6-7 Pupil Identification Number (within each classroom)
Directions: Please assign, within each classroom, a two-digit number to each child, make a list of the names with the assigned identification numbers, send one copy of this list to Minneapolis and retain copies for reference during the progress of your study.

Column

8 Sex of Child: Punch 1 for boys; punch 2 for girls

9-10 Child's chronological age in months (nearest month)
Punch 99 for all children 8 years 3 months and older.

11-12-13 Mental age in months (Pintner Cunningham Test)

14 Child's Ethnic Class according to code below. (Please notify Minneapolis immediately if any of the codes do not provide sufficient basis for classifying pupils into mutually exclusive categories for each field-of-column.

X Information unavailable

1 White (exclusive of #2) - (Projects using code 1 will not use categories 7, 8, 9, or 0)
2 Mexican (including Spanish and Cubans)
3 Indian (American) or Eskimo
4 Negro (exclusive of Puerto Ricans)
5 Puerto Ricans
6 Chinese, Japanese, Filipino, and Hawaiian - other Polynesian
7 These and zero may be assigned to sub-classes of whites
8 which are important for individual projects - Please inform
9 the Minneapolis office immediately if you wish to use such a supplementary sub-class so that other project directors can be informed and asked to use other code numbers.

15 Amount of pre-first-grade-school experience
0 No kindergarten, pre-school or vacation bible school experience.
1 less than 20 half-days total of such experience but some.
2 21 half-days to 100 half-days total pre-first grade school.
3 101 half-days to 200 half-days total pre-first grade school.
4 201 half-days to 300 half-days total pre-first grade school.
5 301 half-days to 400 half-days total pre-first grade school.
6 401 half-days to 500 half-days total pre-first grade school.
7 501 half-days to 600 half-days total pre-first grade school.
8 601 half-days to 700 half-days total pre-first grade school.
9 701 half-days to 800 half-days total pre-first grade school.

16-17 Durrell-Murphy Identification of Phonemes Right minus Wrongs.

18-19 Durrell-Murphy Capital Letter Names - number correct.

20-21 Durrell-Murphy Lower case letter names - number correct.

22-23 Durrell-Murphy Total capital and lower case letters - number correct.

24-25 Durrell-Murphy Learning rate - number of words learned.

26-27 Thurstone-Pattern copying - number correct.

28-29 Thurstone - Identical forms - number correct.

30-31 Metropolitan - word meaning - number right.

Column

32-33 Metropolitan - listening - number right.

Note: (Columns 34-57 may be gang punched for all children in any teacher's room)

X Information unavailable

34 Sex of teacher: 1-Male; 2-Female

35-36 Age of teacher in years (at last birthday)

37 Highest degree held by teacher
- X Information unavailable
- 0 Less than bachelor's degree
- 1 More than bachelor's but less than Master's
- 2 Master's degree
- 3 Master's degree plus additional graduate work, but does not hold a more advanced degree
- 4 Specialists or Professional degree (less than Doctor's) but a degree requiring approximately twice as much educational work as a Master's
- 5 Doctor's degree
- 6 Batchelor's degree

38 Type of teaching certificate held by teacher
- X Information unavailable
- 0 Teacher is uncertified
- 1 Lowest sub-standard certificate issued by state of residence (e.g. temporary permit)
- 2 Higher level sub-standard certificate if state issues two or more levels of such
- 3 Certificate of "standard type" i.e. type held by most first grade teachers in state
- 4 Certificate indicative of higher level than #3
- 5 Other (Please specify, fully, by a letter to Minneapolis office.)

39-40 Total number of years of teaching experience (exclusive of current year)

41-42 Number of years first grade teaching experience (exclusive of current year)

43 Marital status of teacher
- X Information unavailable
- 0 Single
- 1 Married (currently)
- 2 Widowed or divorced (currently unmarried)

44 Number of children the teacher has
- X Information unavailable
- 0 None
- 1 to 8 Actual number of children
- 9 or more children

Column

45-46 Total score for the "basic" approach
47-48 Total score for the "individualized" approach
49-50 Total score for the "language experience" approach
51-52 Number enrolled in child's classroom

53 Length of school day
X Information unavailable
0 Less than 3 hours
1 3-3.5 hours
2 3.6-4.0 hours
3 4.1-4.5 hours
4 4.6-5.0 hours
5 5.1-5.5 hours
6 5.6-6.0 hours
7 6.1-6.5 hou
8 6.6-7.0 hours
9 over 7 hours

54 Length of school year
X Information unavailable
0 Less than 160 days
1 161-165 days
2 166-170 days
3 171-175 days
4 176-180 days
5 181-185 days
6 186-190 days
7 191-195 days
8 196-200 days
9 over 200 days

55 Number of first-grade room in building (if more than 9, punch 0)

56 Number of first-grade rooms in the school district
X Information unavailable
1 One
2 2-5
3 6-10
4 11-20
5 21-40
6 41-70
7 71-100
8 101-200
9 201-400
0 over 400

57 Type of library facilities available to the class
X Information unavailable
1 Have the services of a librarian in the building
2 Do not have librarian services in the building

Column

58 Median Number of Year's education completed by adults living within the school's community. (See 1960 Census Report or later information)

X Information unavailable
0 5
1 6
2 7
3 8
4 9
5 10
6 11
7 12
8 13
9 14

59 Median income in community or Census Tract by family and unrelated adults (Use 1960 Census Report)

X Information unavailable
0 $ 000-$1,000
1 $1,001-$2,000
2 $2,001-$3,000
3 $3,001-$4,000
4 $4,001-$5,000
5 $5,001-$6,000
6 $6,001-$7,000
7 $7,001-$8,000
8 $8,001-$9,000
9 over 9,000

60 Population of the community in which the school is located

X Information unavailable
0 Rural or farm area
1 Incorporated places of less than 1,000
2 Incorporated places of 1,001 to 2,500
3 Urban places of 2,501 to 10,000
4 Urban places of 5,001 to 10,000
5 Urban places of 10,001 to 25,000
6 Urban places of 25,001 to 100,000
7 Urban places of 100,001 to 500,000
8 Urban places of 500,001 to 1,000,000
9 Urban places of over 1,000,000 inhabitants

61 Type of Community

X Information unavailable
0 Rural or farm area
1 Urban community (over 2500 population)
2 Suburban community (over 2500 population)
3 Incorporated places less than 2500 population)
4 Other (please specify by a letter to Minneapolis office)

Optional Test Data

62-63 Metropolitan Matching - number correct
64-65 Metropolitan Numbers - number correct
66-67 Metropolitan Copying - number correct
68-69 Metropolitan Alphabet - number correct

Optional Test Data

70-71-72	Metropolitan Total (all six tests) - number correct
73	Leave blank
74	Leave blank
75	Leave blank
76	Leave blank
77-78	Detroit Word Recognition (number correct) Leave blank if test was not given
79	Variable identification number - Each project director may use this column to code his experimental variables.
80	Punch all these cards 1 in Column 80. This will indicate that this card contains the initial data information for the child whose code number is punched in columns 1-7.

II. FINAL DATA

Column

1-2 Project Identification Number (See list of Directors below)

01 Elizabeth Anne Bordeaux, Goldsboro, N. C. (City Schools)
02 Jeanne S. Chall, City University of New York
03 Donald L. Cleland, University of Pittsburgh
04 Edward Fry, Rutgers - The State University, N. J.
05 Harry T. Hahn, Oakland Schools, Pontiac, Michigan
06 Albert J. Harris, City University of New York
07 Robert B. Hayes, Department of Public Instruction, Harrisburg, Pa.
08 Arthur W. Heilman, Pennsylvania State University
09 Thomas D. Horn, University of Texas
10 William M. Kendrick, San Diego County Department of Education
11 James B. Macdonald, University of Wisconsin
12 John C. Manning, Fresno State College
13 Sister M. Marita, Marquette University
14 Albert J. Mazurkiewicz, Lehigh University
15 Roy McCanne, Consultant, Colorado State Department of Education
16 Katherine A. Morrill, Moses Y. Beach School, Wallingford, Conn.
17 Helen A. Murphy, Boston University
18 Olive S. Niles, Springfield, Massachusetts Public Schools
19 Hale C. Reid, Cedar Rapids, Iowa Public Schools
20 Robert B. Ruddell, University of California
21 J. Wesley Schneyer, University of Pennsylvania
22 William D. Sheldon, Syracuse University
23 George D. Spache, University of Florida
24 Doris U. Spencer, Johnson State College, Vermont
25 Russell G. Stauffer, University of Delaware
26 Harold J. Tanyzer, Hofstra University
27 Nita M. Wyatt, University of Kansas

3-4 School number (within each project)
Directions: Please assign each building a two-digit number, keep a copy of this list with the assigned numbers and send a copy to Minneapolis.

5 Classroom number (within each building in each project)
Directions: Please assign each classroom within each school used in the project a one-digit number, keep a copy of this list and send a copy to Minneapolis.

6-7 Pupil Identification Number (within each classroom)
Directions: Please assign, within each classroom, a two-digit number to each child, make a list of the names with the assigned identification numbers, send one copy of this list to Minneapolis and retain copies for reference during the progress of your study.

8-9 Class size as of May 1, 1965

Column

10 Cost Per Pupil in Average Daily Attendance (See Notes From Detroit Breakfast Meeting)
0 $900 or more
1 $800-$899
2 $700-$799
3 $600-$699
4 $500-$599
5 $400-$499
6 $300-$399
7 $200-$299
8 $100-$199
9 $99 or less

11-12 Pupil Attendance - total number of days absent

13-14 Teacher Attendance - total number of days absent

15 Teacher Attrition
0 Teacher not replaced during instructional period
1 Teacher replaced during instructional period
NOTE: Temporary substitutes are not to be counted as replacements

16-17 San Diego Pupil Attitude Inventory - number correct

Stanford Achievement Test Primary I Battery

18-19 Word Reading - number correct

20-21 Paragraph Meaning - number correct

22-23 Vocabulary - number correct

24-25 Spelling - number correct

26-27 Word Study - number correct

28-29 Arithmetic (Optional) - number correct

Gilmore Oral Reading Test

30-31 Accuracy - grade equivalent score

32-33-34 Rate - words per minute

35-36 Fry Test of Phonetically Regular Words - number correct

37-38 Gates Word Pronunciation Test - number correct

39-40 Karlsen Phonemic Word Test - number correct

Teacher Rating

41 Class Structure
1 Teacher structures for the children---gives detailed clear directions, and expectations are clearly spelled out in detail.

Column

2 Teacher is generally well organized and clear in assigning tasks---directions and expectations clear, but not spelled out as above.
3 There is a moderate degree of structure, and information on expectations. Some degree of vagueness.
4 There is generally more vagueness than clarity, and more looseness than structure.
5 Teacher is generally vague and directions seem confusing to the children.

42 Extent of Class Participation
1 High participation on part of most children at all times.
2 Moderately high participation on part of most children, most of the time but with some variability.
3 Teacher has a group of children who are participating well most of the time, but a fairly large group who are not consistently with the teacher.
4 Participation is highly variable, but tends to be low quite often.
5 Class is generally unresponsive with only a very few children actually participating.

43 Awareness of and Attention Paid to Individual Needs of Pupils
1 Teacher exceptionally aware of pupil needs with effective adjustment of instruction in light of these needs.
2 Teacher is generally aware of pupil needs and attempts to make the necessary instructional adjustments in light of these needs.
3 There is moderate awareness and adjustment of instruction by the teacher based upon the needs of individual pupils in the class.
4 Limited awareness of and attention paid to individual needs of pupils.
5 Total lack of awareness on the part of the teacher to the individual instructional needs of the pupils.

44 Overall Teacher Competence
1 Excellent
2 Good
3 Adequate
4 Poor
5 Incompetent

45-46 Pintner-Cunningham Primary Test - raw score

<u>Writing Sample - Restricted Stimulus Measure</u>

47-48-49 Mechanics Ratio Scale (See Mannings Directions)

50-51-52 Total Number of Words Spelled Correctly

53-54-55 Total Number of Running Words

Column	
56-60	Leave Blank
61-78	May be used for unique data
79	Punch 0 if child was used in the project's analysis of results; Punch 1 if child was not used in analysis of results
80	Should be punched 2 to identify this card as containing terminal data

III. UNIQUE DATA

Column

1-2 Project Identification Number - 01

3-4 School Number

5 Classroom Number

6-7 Pupil Identification Number

8 Repeating First Grade
- 0 Non-repeater
- 1 Repeating first grade for the first time
- 2 Repeating first grade for the second time

9 Physical Handicap
- 0 No obvious physical handicap
- 1 Speech defect
- 2 Hard of hearing--uncorrected
- 3 Hard of hearing--corrected
- 4 Poor vision--uncorrected
- 5 Poor vision--corrected
- 6 Asthma or other respiratory disorder
- 7 Epilepsy
- 8 Other

10 General Maturity
- 1 Very inmature
- 2 Somewhat inmature
- 3 Maturity average for a first-grader
- 4 Somewhat more mature than average for a first-grader
- 5 Very mature for a first-grader

11 Emotional Problem
- 0 No obvious emotional problem
- 1 Slight emotional problem
- 2 Definite emotional problem, but not severe in nature
- 3 Rather severe emotional problem
- 4 Very severe emotional problem

12 General level of Home Environment
- 1 Very poor home environment
- 2 Somewhat below average home environment
- 3 Average home environment
- 4 Somewhat above average home environment
- 5 Exceptionally good home environment

Column

13 Marital Status of Parents
- 0 Child living with both parents
- 1 Father dead, child living with mother
- 2 Mother dead, child living with father
- 3 Parents divorced, child living with mother
- 4 Parents divorced, child living with father
- 5 Child living with relative other than parents
- 6 Child is adopted
- 7 Own mother and step-father
- 8 Own father and step-mother
- 9 Other

14 Average Income of Family
- 1 Low (below $3,000)
- 2 Somewhat below average ($2,001-4,000)
- 3 Average ($4,001-6,000)
- 4 Above average ($6,001-8,000)
- 5 High ($8,001 and above)

15 Father's Occupation
- 1 Unemployed
- 2 Laborer
- 3 Semi-Skilled
- 4 Highly-Skilled
- 5 Professional

16 Mother's Occupation
- 1 Housewife
- 2 Domestic Work
- 3 Semi-Skilled (receptionist, factory worker, department store clerk, etc.)
- 4 Highly skilled (bookkeeper, secretary)
- 5 Professional

17-18 Education of Father
- 1-12 Actual grade completed
- 13 1 year of college
- 14 2 years of college
- 15 3 years of college
- 16 4 years of college
- 17 More than 4 years of college, but no degree beyond A.B. or B.S.
- 18 Master's Degree
- 19 More than master's degree, but not Ph.D., M.D., D.D., D.D.S., etc.
- 20 Ph.D., M.D., D.D., D.D.S., etc.

Column

19-20 Education of Mother
- 1-12 Actual grade completed
- 13 1 year of college
- 14 2 years of college
- 15 3 years of college
- 16 4 years of college
- 17 More than 4 years of college, but no degree beyond A.B. or B.S.
- 18 Master's Degree
- 19 More than master's degree, but not Ph.D., M.D., D.D., D.D.S., etc.
- 20 Ph.D., M.D., D.D., D.D.S., etc.

21 Age of Father (or other male adult with whom child lives)
- 1 Under 21 years
- 2 21-30 years
- 3 31-40 years
- 4 41-50 years
- 5 51-60 years
- 6 over 60 years

22 Age of Mother
- 1 Under 21 years
- 2 21-30 years
- 3 31-40 years
- 4 41-50 years
- 5 51-60 years
- 6 over 60 years

Test for the Three Pre-Primers

23-24 Sentence Meaning

25-26 Sensory Images

27-28 Emotional Reactions

29-30 Relationships

31-32 Scrutiny-Context

33-34 Phonetic Analysis

35-36 Structural Analysis

37-38-39 Total Score

Test for Fun with Our Friends

40-41 Sentence Meaning

42-43 Sensory Images

44-45 Emotional Reactions

Column	
46-47	Relationships
48-49	Scrutiny-Context
50-51	Phonetic Analysis
52-53	Structural Analysis
54-55-56	Total Score
	Test for More Fun with Our Friends
57-58	Sentence Meaning
59-60	Sensory Images
61-62	Emotional Reactions
63-64	Relationships
65-66	Scrutiny-Context
67-68	Phonetic Analysis
69-70	Structural Analysis
71-72-73	Total Score
74-79	Leave Blank
80	Card Identification Number
	3 Third Card

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